Tristan Guest

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EDUCATION

Dalhousie University   Halifax, NS, Canada
Ph.D., Physical Oceanography   *2013 – 2020*

Dalhousie University   Halifax, NS, Canada
B.Sc., Combined honours in Mathematics and Oceanography   *2008 – 2013*

EXPERIENCE

Back-End Developer and Chief Scientific Officer   2021 – present
Luna Sea Solutions Inc.   *Lunenburg, NS, Canada*

- Build software and web products to help Luna transition from a services model to software- and data-as-a-service
- Core contributor to the LunaOceans progressive web app for visualizing ocean data (lunaoceans.app)
- Architect, build, and manage back-end functionality using Python, AWS, and MongoDB to handle high rates of data thoughput
- Build UI components with React on Next.js to facilitate intuitive user experiences
- Write and advise on technical reports and grey literature for industry clients and academic partners

Chief Technology Officer   2020 – 2021
Luna Sea Solutions Inc.   *Lunenburg, NS, Canada*

- Managed development of software packages for tidal energy resource assessment and environmental monitoring
- Used Python for statistical data analyses and validatation of software output, ensuring levels of quality in alignment with academic and industry standards
- Established a company version control workflow using Git/Github
- Wrote and advised on reports to funding bodies alongside academic and industry research partners

Doctoral Researcher   2013 – 2020
Department of Oceanography, Dalhousie University   *Halifax, NS, Canada*

- Desiged and carried out research programs addressing knowledge deficits in the field of coastal ocean dynamics
- Built data pipelines and software in Python and Matlab to process, analyze, and visualize ocean data
- Specialized in tools and methods for time series analysis and image processing
- Authored multiple peer-reviewed academic papers and presented research at domestic and international conferences

PROJECTS

LunaOceans.app | *TypeScript/React/Next.js, Python, MongoDB, AWS, Mapbox, WebGL*   2021 – Present

- Built front-end components for a full-stack web-mapping application using React, deployed on Vercel
- Used Python and AWS (S3, Lambda functions) to process and serve numerical model data as web-map tiles
- Administered and developed applications for the app's noSQL database using Python and MongoDB
- Built a GPU-powered particle animation to visualize ocean currents and wind using Mapbox and WebGL

Tide Forecast API | *Python, AWS, MongoDB, React/Next.js, Mapbox*   2021 – Present

- Built a REST API and interface to serve tide data generated on-demand by a novel forecast model
- Architected and built a cost-efficient back end for generating and serving the predictions via AWS Lambda functions and S3
- Used MongoDB geoqueries to spatially reference user requests and route forecasts via AWS Lambda and S3

TECHNICAL SKILLS

Languages: Python, JavaScript/TypeScript, HTML/CSS, Matlab; some C, GLSL (WebGL)
Frameworks: React, Next.js, Flask
Tools/Resources: Git, AWS, MongoDB, VS Code
Libraries: NumPy, Pandas, Matplotlib, OpenCV